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OUTLINE CONSTRUCTION MANAGEMENT PLAN

Claremont Project, Howth

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OUTLINE CONSTRUCTION MANAGEMENT PLAN FOR THE PROPOSED MIXED USE DEVELOPMENT AT THE CLAREMONT SITE, HOWTH, CO. DUBLIN.

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1.0 OVERVIEW

1.1 INTRODUCTION

Atlas GP Limited have commissioned Barrett Mahony Consulting Engineers (BMCE) to prepare a Construction Management Plan to accompany a planning application for the site on Howth Road, Howth, Co. Dublin.

The purpose of this report is to define the project specific measures and construction methodologies to be put in place/followed during the construction process. This report should be read in conjunction with following reports:

- Outline Demolition & Construction Waste Management Plan (C&D WMP) – BMCE,
- Outline Construction Environmental Management Plan (CEMP) – Enviroguide,
- Planning stage dewatering plan, risk assessment and mitigation measures- Minerex Environmental Report,
- Materials Management & Remedial Strategy Plan- Golders Associates Ireland Limited (Golders AIL)

The Project Outline Construction Management Plan (CMP) will be subject to periodic review and has been developed in respect of the permitted development. It is intended to be a live document which will be updated as the construction process proceeds to account for any necessary changes that are required to the measures and methodologies set out within.

The CMP defines the physical and legal limitations within which a person or persons can carry out development works that affect the existing nature of public road, footpaths and the surrounding environment for a duration of time.

The CMP is subject to change based on the following:

- Compliance requirements with Fingal County Council
- Requirements by other state bodies/ Regulations
    - Waste Management Act 1996
    - Eastern-Midlands Regional Waste Management Plan (WMP) 2015-2021
- Concerns raised by residents and any other persons affected by the works

To ensure this plan is as accurate as possible, BMCE have liaised with Walls construction and Minerex Environmental and Golders AIL, as part of its preparation.

1.2 THE SITE

Figure 1- Shows the locations of the site. The site is located on the main Howth road on the periphery of Howth village before the DART station.

Figure 1 - Location of Site

Figure 2- Shows the brake down of the site. Originally the site was broken into three separate premises: Techrete – Precast Concrete Manufacturing Plant, Teeling Motors- Car Garage, and the Garden Centre.

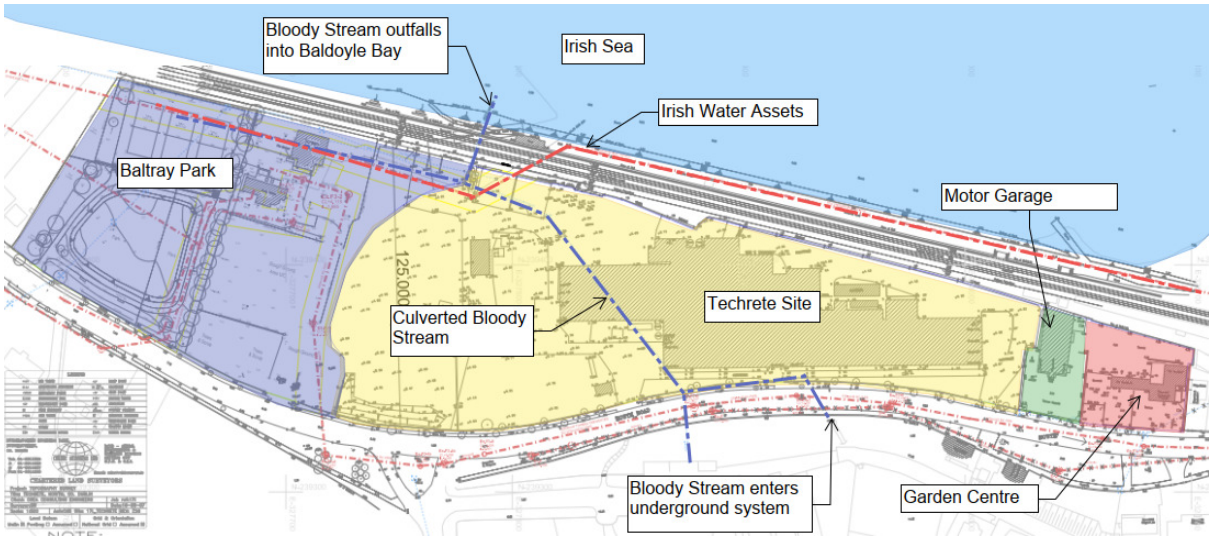


Figure 2 -Site Brake Down

The Techrete factory, in operation from 1985 till 2008, specialise in the design, manufacture and supply of architectural precast cladding to the Irish and UK construction markets. Since then the site has remained vacant. The site consists of offices, manufacturing and storage facilities located within a minimum 8 interconnected buildings a dozen or so interconnected, two-to-three storey industrial style sheds with corrugated steel roof and masonry walls. These buildings are located mainly in the centre of the application site and spread towards the east, up to the Teeling Motors site and come within six metres of the southern site boundary with Howth Road. The remainder of the site was used as a storage area for manufacturing equipment/material and the storage of the finished products i.e. concrete panels. An internal walk through the building was not possible, however given it previous function the internal soft materials will be a mix of non-hazardous and hazardous materials, i.e.

partitions, cabling, asbestos and leftover manufacturing chemicals. The Techrete site comprises mostly of the overall application site (c.2.672 hectares).

The Teeling Motors site consists of is a steel portal frame structure with a corrugated roof, separate garage and car park. The third site consists of a single storey masonry building, corrugated roof and concrete yard. All three site are now vacant.

Currently running under the Techrete site is a culverted stream, “The Bloody Stream”. This stream rises in the Hill of Howth and navigates it way towards Howth Castle. Presently there are water control measure in place, via three large retaining walls, which attenuate the flow before entering a piped system that traverses the site and outfalls via the “Bob Davis Culvert” into Baldoyle Bay. This stream is tidal influenced but only during high tide. During medium to low tide it is clear of sea water, Figure 2.

The whole site has historical contaminated land, and hotspots of contamination have been identified and documented in Golder Associates Ireland Limited, October 2019. Materials Management & Remedial Strategy Plan Claremont Development Site, Howth (Golder 2019). The findings, construction practices of handling the contaminated soil and the protection of the surface and ground water are discussed in the Outline Construction Environmental Management Plan (CEMP).

1.3 DEVELOPMENT OVERVIEW

The proposed development will occur at a site bounded to the south by the Howth Road, to the east by a private dwelling, to the north by the DART line, and to the west by Local Authority lands. The site incorporates the former Techrete manufacturing facility, the former Beshoff's Motors showroom, and the former Howth Garden Centre.

The proposed development will include the demolition of all structures on site (c.8,162sqm GFA) and excavation of a basement. The proposed development comprises of the provision of a mixed use development of residential, retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement. Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. The proposed development includes the provision of two vehicular entrances on to Howth Road, excavation of basement to provide for car parking, plant, waste storage and ancillary use. Additional car parking spaces shall be provided at lower ground floor level. A total of 439 no. car parking spaces and 1,335 no. bicycle parking spaces, including 49 no. bicycle spaces to cater for the retail units and creche shall be provided. One vehicular access is located at Block A, serving car parking spaces. The second is at Block C, providing access to the basement, residential and retail parking, and a service area for the retail units. A service route will be provided along part of the northern perimeter of the site with access from the western end of the site at a junction with Howth Road and at the main vehicular entrance at Block C;

A publicly accessible walkway/cycleway to the north of the site shall be provided at podium level. A civic plaza will be provided between Blocks D and C, and a landscaped park to the west of Block A. A channel to the sea for the Bloody Stream with associated riparian strip shall be incorporated as a feature within a designed open space between Blocks A and B. Communal gardens will be provided for Blocks A, B and C;

The residential component consists of 512 no. residential units, which includes 4 no. studio, 222 no. one bed, 276 no. two bed, 10 no. three bed apartments, and communal facilities of 708 sqm. Ground floor units onto the Howth Road will have own door access. The units will be served by balconies or terraces on all elevations;

Block A, with a maximum height of seven storeys of apartments over lower ground level car park (a total of eight storeys), will provide for 234 residential units, with residents' amenities to include a gym, residents' lounge, residents' support office, and 2 no. residents' multi-purpose rooms. Block B, with a maximum height of seven storeys of apartments over lower ground floor and basement car park (a total of eight storeys over basement), shall provide for 154 no. units, residents' lounge, residents' multi-purpose room, and creche of 236 sqm with outdoor play area. Own door access will be provided at ground floor. Block C, with a maximum height of seven storeys over basement car parking (a total of seven storeys) will provide for 83 no. residential units in two wings over a retail unit and Block D, with a maximum of 6 storeys over basement, shall provide for 41 no. residential units over retail units;

The commercial component in Blocks C and D consists of 4 no. units with 2,637 sqm gross floor area. In Block C, it consists of a 1,705 sqm anchor unit, accessed from the civic plaza. In Block D, it consists of a restaurant (243 sqm) and retail unit (603 sqm) and café (86 sqm). The restaurant and retail units are accessed from Howth Road, and the café is accessed from the upper level of the civic plaza.

The proposed development includes the provision of public and communal open space, green roofs, landscaping, boundary treatments, set down locations, substations, meter rooms, waste management and all ancillary site works, including upgrading of the public paths along Howth Road and relocation of bus stop in new setback with a bus shelter. Two set down areas are provided at either end of the site;

The gross floor area of the proposed development is 48,252 sqm (excluding enclosed car parking) on a site of 2.68 ha.

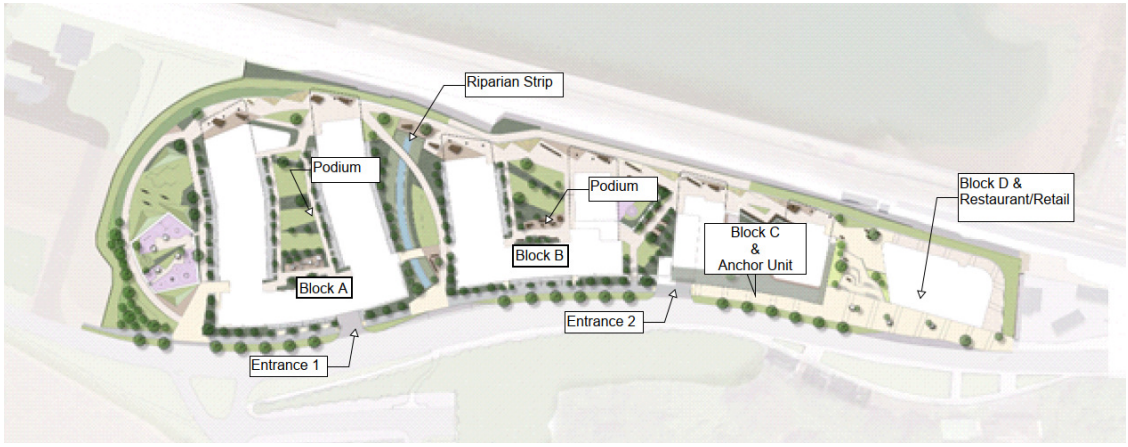


Figure 3 - Proposed

2.0 METHODOLOGY

This plan has been prepared with reference to:

- Eastern-Midlands Regional Waste Management Plan (WMP) 2015-2021.
- The Waste Management Act (1996) and subsequent amendments.
- Department of Environment policy statements, including:
    - "Changing our Ways" (1998).
    - "Delivering Change – Preventing and Recycling Waste" (2002).
    - "Taking Stock and Moving Forward" (2004).
    - "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects" (Dept. of Environment July 2006).
- National Construction and Demolition Waste Council initiative.
- Greater Dublin Regional Code of Practice for Drainage works.
- Planning stage dewatering plan, risk assessment and mitigation measures- Minerex Environmental Report,
- Materials Management & Remedial Strategy Plan- Golders Associates Ireland Limited (Golders AIL)

3.0 CONSTRUCTION PROGRAMME

3.1 Demolition Phase

Before any works begin on site, all services entering the site will be disconnected, and relevant authorities contacted. All surface water collection points discharging into Bloody Stream will be sealed and a survey carried out to establish any hazardous materials, i.e. asbestos. An initial survey for asbestos has been carried out and hotspots have been highlighted. For further information regarding hazardous and non-hazardous materials refer to the CEMP.

The demolition will start east to west, with the garden centre. Starting with the internal soft strip before dismantling the structure. This will be the process for each structure. All materials will be segregated, stored in tidy bundles before being sent for recycling. The brake down of recyclable material is discussed in detail in the C&D C&D WMP. The storage location for demolition materials will move as the works progress.

Figure 1 – Shows the structures to be demolished and the approx. areas.

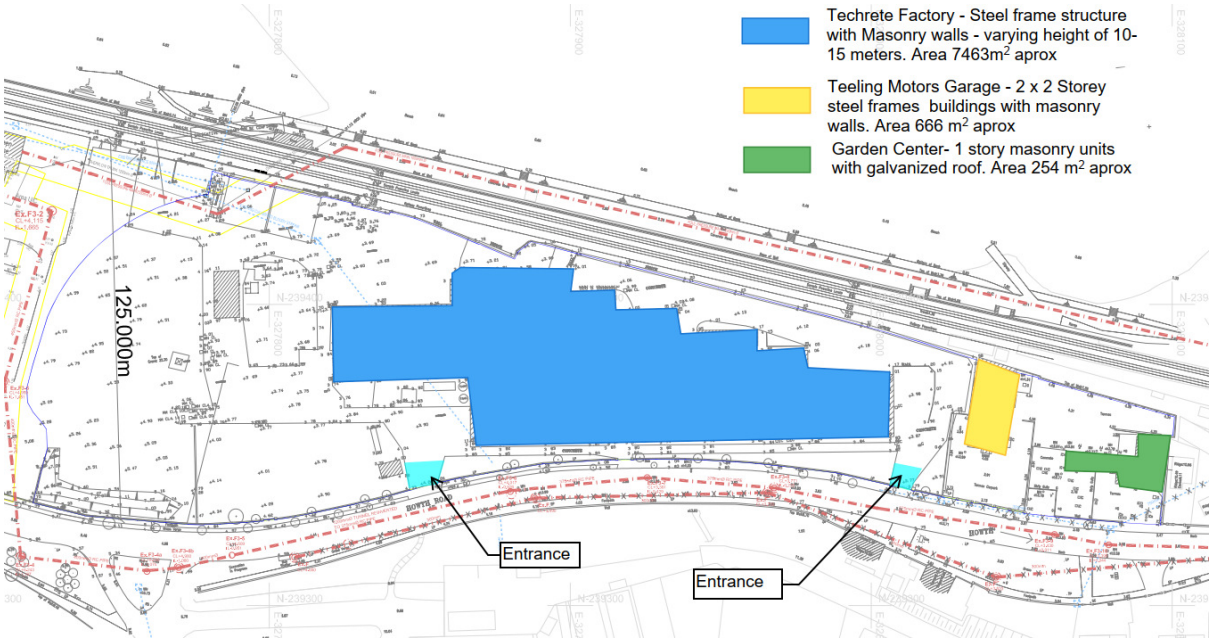


Figure 4 - Demolition Plan

The combined development is 70% hardstanding, with a significant amount concrete pavement. The slab will be broken out using a rock breakers and materials either sent off site or used for the piling matt depending on the quality. Dust dampeners will be used to control dust. Refer to Section 4.5 for Noise & Dust Control.

It is anticipated that hardcore will have to be brought to site to form the piling mat. The piling mat for the basement will be formed first, this will then be recycled and used to form the piling mat under Block A.

The estimated quantity of hardcore equates to 3000m^2 by 600mm deep, circa 1,800m^3 of hardcore. This will be removed off site, once the piling is completed.

Piling will start in the basement area and finish under block A, Figure 5. The basement piles will be secant piles socketed into the bedrock, forming a sealed box around the perimeter of the basement. block A is above the ground water level and the piles bored will be used for pile caps.

Piles that require rock sockets will be drilled under bentonite or cased to rock head level, to ensure stability of the bore through the water bearing sands. CFA piles will be carefully monitored to ensure positive pressure in the concrete below the auger head as it is retracted, to prevent overbreak or material falling into the bore.

The Bloody Stream currently flows in a 600mm diameter culvert under the site. The current route clashes with the proposed basement profile. To resolve this a temporary diversion, 750mm dia pipe will be installed underground for the duration of the construction phase, Figure 5 , this is discussed in detail in section 4.9. The drainage works will be installed in accordance with “Greater Dublin Regional Code of Practice for Drainage works” and Fingal County Council Guidelines.

Figure 5- Shows the areas to be excavated and the Bloody stream diversion.

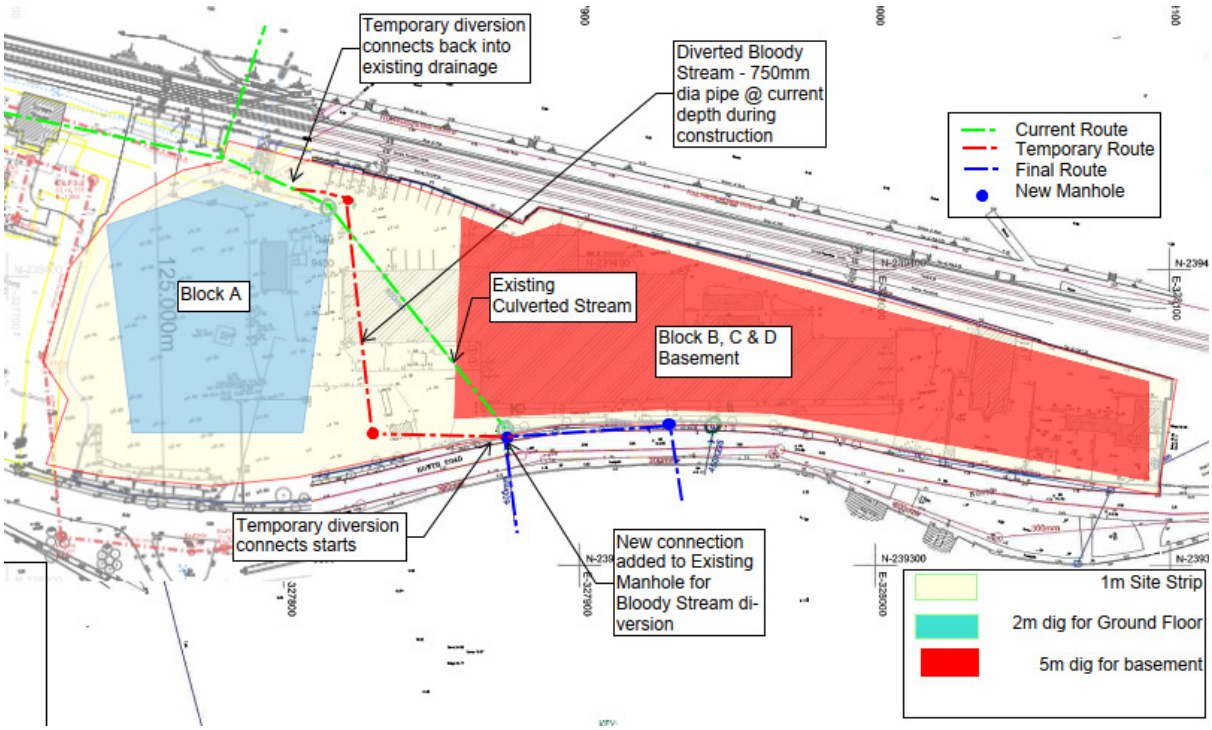


Figure 5 – Excavation overview and Bloody Stream diversion

As soon as piling is significantly progressed construction of the capping beam will start. Once complete, excavation of the basement can start.

3.2 Excavation Phase

Prior to excavation, a detail review of the final cut and fill model will be carried out to confirm cut and fill volumes. Detailed quantities of material to be excavated will be verified through accurate survey techniques by the groundwork’s contractor at the construction phase. Confirmation of final hotspot volumes will be provided and incorporated in the excavation plan, guidance provided in the CEMP report.

The excavation of the basement will begin in the east and progress west. As the works progress temporary propping of the basement walls will be fitted. The basement will extend below groundwater, the piled wall will significantly reduce ground water seepage, but not all. Similarly, rainfall will have no viable drainage from within the excavation.

The lower ground floor slab under block A is above ground water level. However, it is anticipated that some pockets of perched water will be encountered in the excavation.

The excess water, in the basement and under block A, will be managed using Minerex dewatering plan, operated under a licence approved by the local authority. The water will be pumped into a treatment facility and discharged into the public sewer. This water will not be released into the Bloody Stream.

There are three subcategories of soil materials that require management and/or offset removal during the construction phase of the project. These categories are as follows:

- Insitu soils for assessment and verification of reuse/disposal;
- Pile Arisings;
- Hazardous Soils (verification)

Table 1- shows a breakdown of volumes for each subcategory. The cut and fill balance at the site estimates to be 67,400m^3. These volumes are based on available plans and proposed formation levels for areas of the site to be excavated.

Cut Balance	Area (m^2)	Volume (m^3)
Earth		
Block A (2.5m strip)	6,308	15,770
Basement (0-4.0m)	9,933	39,732
Block B (road strip 2.0m)	690	1,380
Riparian Strip		
Max Depth – 2m	1,632	3,264
Pile Arising		
West Block 970 No.600 dia x 12m (plus 25%)		3,940
East Block 450dia secant wall x 4m		1,015
Total Earth		65,101
Landscaping, 1.75m above	4,000	-7,000
Cut/Fill Balance		**58,101**
Rock		
Basement (circa 1.2m)	9,933	11,920
East Block Pile Arising – 2m		510
Total Rock		12,450
Total Approx. quantity of excavated material		70,551

Hazardous soil for verification (estimate for disposal off site)		2,600
Pile Arisings (Non-Hazardous for disposal)		5,200
Insitu Soils (Inert/Non HazWaste less fill requirement)		50,301
Rock		12,450
Total Volume Removed off site		**70,551**

Table 1 - Estimate Cut Fill Balance – refer Materials Management & Remedial Strategy Plan

The basement extends 5m below existing ground level (4.0m OD). Based on the information provided in the IGSL site investigation report, rock formation varies across the basement but on average is at 0.0m OD taken over the whole basement. Therefore, a figure of 1.2m of rock breakout is applied to the whole basement.

The rock is described as weak to medium-strong weathered limestone. This will be broken out using a rock breaker or similar depending on the construction requirements. This will be discussed in greater detail in the detailed construction management plan carried out by the appointed contractor. The chosen method will ensure that noise and dust disturbance is kept to a minimum.

It is estimated 7000m^3 of inert material excavated will be stock piled on site to be used for landscaping at the end of the construction period. This will be stock piled on the far west of the development, near the carpark. Figure 8

Material to be removed off-site will be classified in a Waste Classification Report. The classifications are 'Hazardous', 'Non-Hazardous' and 'Inert'. Material to be removed offsite will be sent either for re-use subject to appropriate authorisations and if material cannot be re-used/recovered an appropriately permitted/licensed sites will be sent for disposal. This is discussed in detail in the CEMP & C&D C&D WMP.

3.3 Construction

To maximise efficiency an overlap between the excavation phase and the construction phase is anticipated. The construction phase will start with the basement under block B, C, and D, followed by the foundation pile caps for block A. Works will start in the east moving west across the site.

The construction of each block will overlap. It is estimated the project will take 40 months to complete. However, this is an indicative figure and subject to planning and compliance approvals.

The superstructure will be a combination of concrete slabs, columns and beams.

Figure 6- shows the sequence of construction, starting in the green area and moving into blue and finishing in yellow. Landscaping will be completed in conjunction with the phasing.

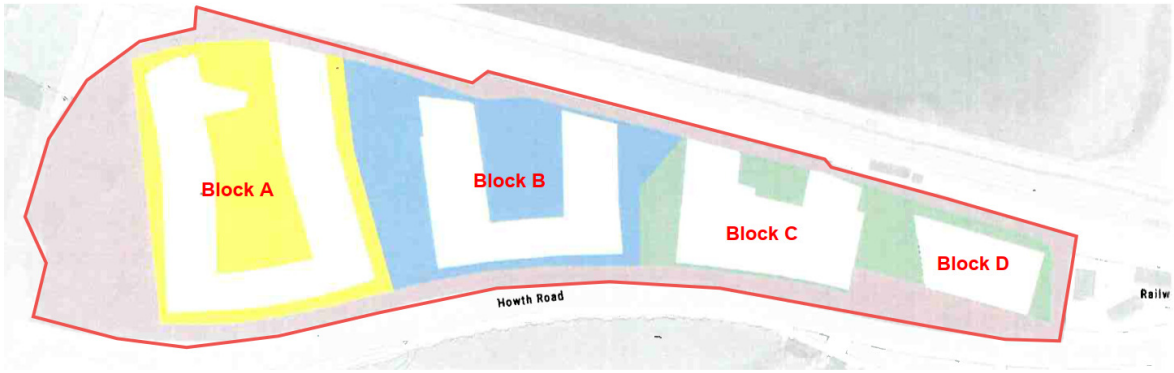


Figure 6 – Construction Plan

Drainage works will be completed as the works progress. However only when the development is completed will the Bloody Stream be released into the riparian strip via the open channel, thus completing the development.

Figure 7 – Shows the ground floor foul and surface water drainage for the proposed development.

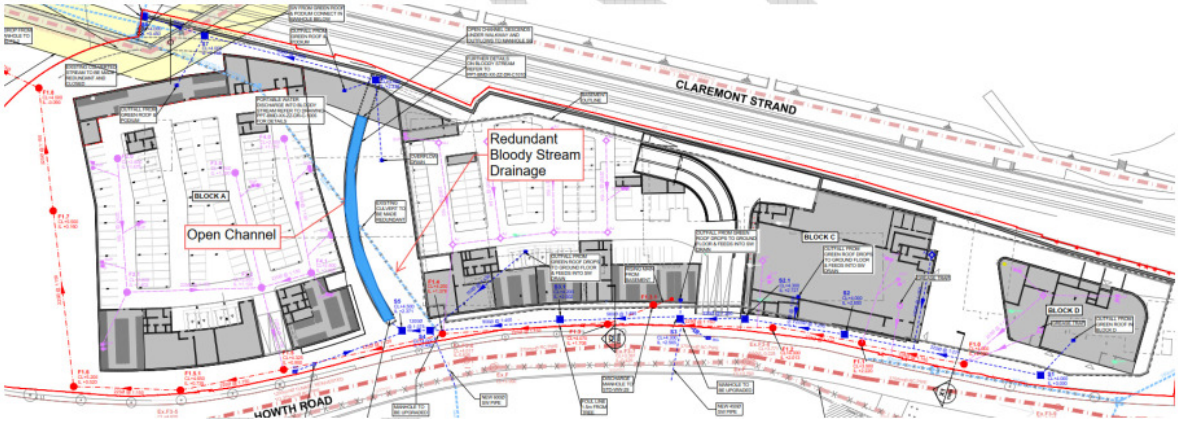


Figure 7- Drainage layout

It is anticipated that landscaping works will begin over a year into the project, starting with the green roof in Block D and the podium in Block C and moving east to west across the development. Topsoil and inert subsoil retained during the excavation phase will be used for landscaping, with some topsoil bought to site for finishing. It is estimated that 7,500m^3 will be required for landscaping, Table 2 .

Table 2- shows the quantity and breakdown of inert material required for landscaping.

Landscaping Material	Area m^2	Volume m^3
Landscaping (1.75m)	4,000	6,000
Topsoil (0.250m)	6,000	1,500
Total Approx. quantity of deposited material		7,500

Table 2 -Material breakdown for landscaping

4.0 CONSTRUCTION MANAGEMENT PLAN

4.1 Site Access

Access and egress to the development will be on Howth Road via the two entrances, each providing entry and exit. Both entrances are the existing entrances to the Techrete site and have adequate site lines in both directions for safe access and egress.

The entrances will operate under a simple priority configuration i.e. no temporary traffic signals are proposed nor required. Appropriate operated security will be maintained at the site access gates in order to secure the site, to control vehicular access and to monitor and record all deliveries and removals operations. Site vehicles turning right is not seen as an issue, as the previous use of the site would have had high traffic movement with the majority towards Sutton Cross. Therefore, vehicles going towards Sutton cross shouldn't be an issue, however this will be reviewed on site and if required a banks person will be provided to navigate vehicles across the road.

4.2 Site Layout

It is expected that all vehicles will be able to drive directly into the site and turn within before exiting, limiting any potential impact on the local road network. In addition, a staging area will be provided to facilitate the stacking of HGV's within the site which will be permitted by the phased approach to construction set out previously. This will be particularly relevant during the excavation works as well as concrete deliveries.

Pedestrian access will be strictly controlled via manned turnstile system. Only Safepass accredited personnel will be permitted on site and daily in-out attendance records will be maintained. Appropriate segregation will be employed on site to separate pedestrians from heavy equipment. Fenced off pedestrian walkways will be provided close to the site offices. There will be limited parking on site for staff members. Staff will be encouraged to use public transport or cycle.

Figure 8 – Shows the site layout during construction, this includes parking, stockpile storage and welfare facilities.

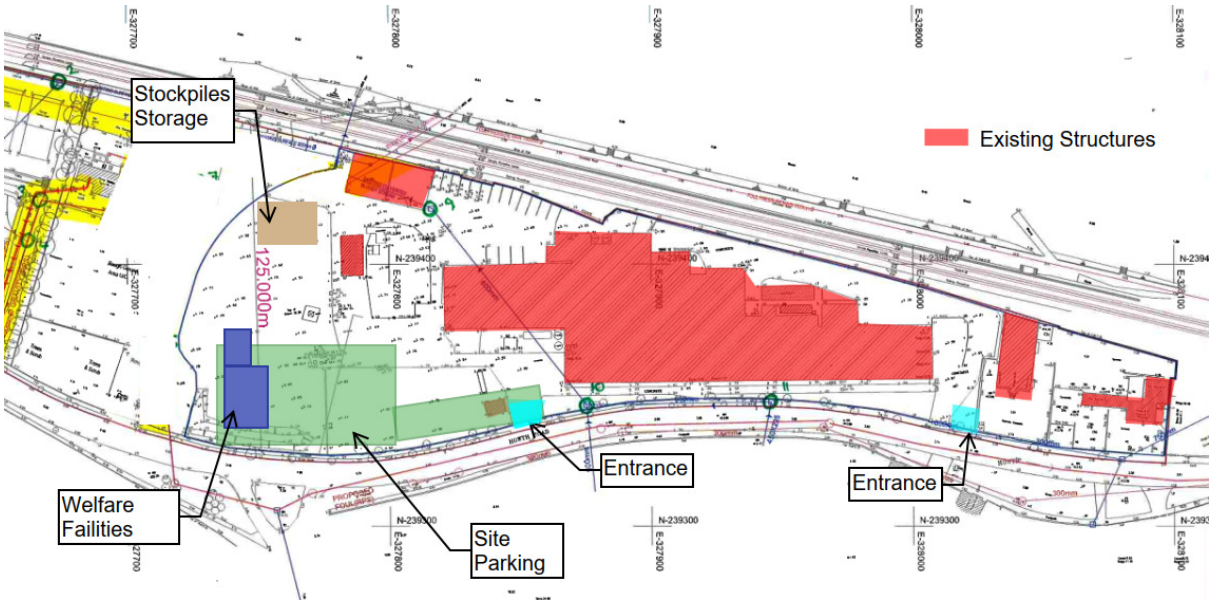


Figure 8- Site layout

Foul generated during construction phase will be discharged using the existing connection, into the public sewer in Howth Road and portable water will be obtained using the existing connections to the water mains in Howth road. Figure 9

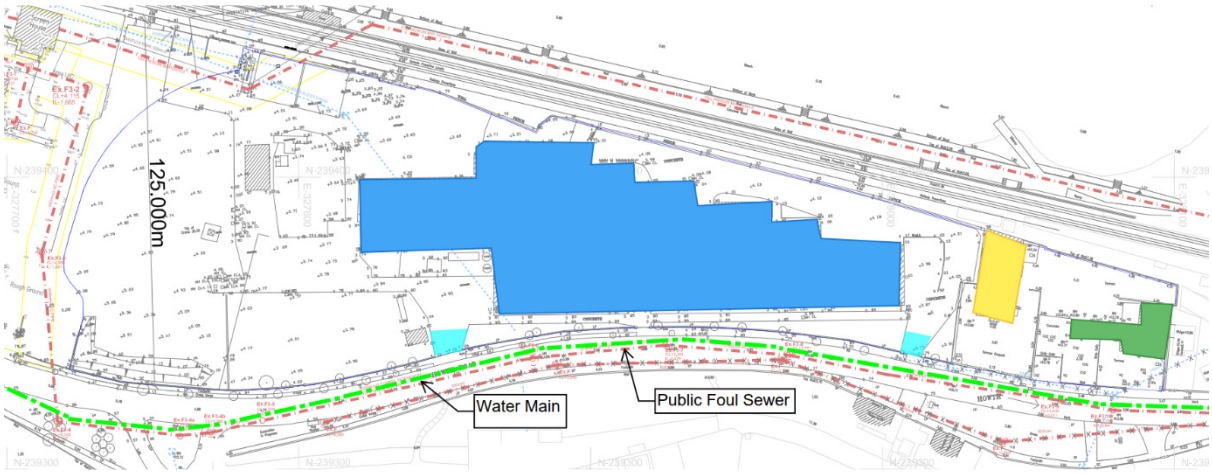


Figure 9 Public Portable Watermain and Foul Sewer

4.3 Working Hours

It is envisaged that working hours during the construction process will be primarily standard working hours for the construction industry and working hours normally permitted by Fingal County Council.

8.00 – 18.00 Monday to Friday

8.00 – 13.00 Saturdays

No works are envisaged to be carried out on Sundays, should the need to work Sundays and or Bank Holidays be required a written submission will be made to Fingal County Council for permission to do so. Every effort will be made to ensure that no works are required outside of the above periods. However, there may be some instances where this may not be possible for a variety of reasons e.g. works in the public road which are subject to restricted working times to minimise traffic impact. In such instances, specific agreement will be required from Fingal County Council in advance of any such works taking place.

4.4 Hoarding

The initial work on site will include the erection of an appropriate standard hoarding around the entirety of the site in order to protect the works and members of the public. The boundary to the site will always be maintained. Adequate site security will be maintained throughout the contract period.

4.5 Car Parking

The provision of car parking on-site will require balanced consideration. It will be a goal throughout the project to limit the number of workers travelling to the site by car through a variety of means including:

- Promoting the use of the public transport options, particularly given the proximity of the DART service;
- Providing an adequate amount of on-site cycle parking;
- Promoting car sharing amongst workers.

However, provision will also be mindful of the potential for overspill parking on the local road network should insufficient parking be provided. On this basis, the successful contractor will be required to identify a realistic on-site parking provision for staff and put in operation a Mobility Management Plan for their workers to ensure this required number is minimised throughout the project.

4.6 Piling

Piles that require rock sockets will be drilled under bentonite or cased to rock head level, to ensure stability of the bore through the water bearing sands. CFA piles will be carefully monitored to ensure positive pressure in the concrete below the auger head as it is retracted, to prevent overbreak or material falling into the bore.

The piling method should include specification to prevent introduction of a vertical conduit for contamination from shallower made ground. (e.g. case bores)

The piling methodology should include the use of water compatible grout to avoid any contamination of groundwater.

4.7 Noise & Dust Control

A Construction Noise Management Plan will be put in place for the construction process, a third-party consultant will be engaged to prepare this report and monitor activity and noise levels generated. The Noise Management Plan will address the following areas:

4.7.1 Noise Sensitive Locations

The site is bounded by the Dart line to the North, community park to the West, private residences to the East and opposite Howth Road is the golf course along with single private residences. Steps will be taken to ensure that any noise arising will be adequately mitigated. It should be noted that as part of the scheme design due consideration has been given to the issue of noise and physical and operational measures have been proposed to mitigate potential noise impacts associated with the site.

St Mary's Church is located on the opposite side of Howth Road. This is an active parish and care will be taken to monitor when events are taking place to ensure minimum disruption.

4.7.2 Baseline Noise Survey

A baseline noise monitoring programme will be completed prior to construction works commencing. Noise monitoring will be carried out at specific locations, still to be finalised. Survey details, procedures and results of this aspect of the baseline noise monitoring programme will be in general in accordance with ISO 1996: Part 2: 2007

4.7.3 Assessment of Noise Effects

A review of BS5228 will be undertaken and advise will be shared regarding areas of significant construction noise. The construction phase will comply with BS 5228 'Noise Control on Construction and open sites Part 1. Code of practice for basic information and procedures for noise control.'

4.7.4 Noise Control Audits

Noise control audits will be conducted at regular intervals through the construction phase of the development. In the first instance it is envisaged that such audits will take place monthly. This subject to review and the frequency of audits may be increased if deemed necessary.
The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed
- Opportunities for noise control 'at source'
- Optimum siting of plant items
- Plant items being left to run unnecessarily
- Correct use of proprietary noise control measures
- Materials handling
- Poor maintenance
- Correct use of screening provided and opportunities for provision of additional screening

4.7.5 Dust Management Plan Overview

The objective of dust control is to ensure that no significant nuisance occurs at nearby sensitive receptors. To develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK and the USA.
Effective site management regarding dust emissions will be ensured by the formulation of a dust management plan (DMP) for the site.
The key features of the DMP are:

- the specification of a site policy on dust;
- the identification of the site management responsibilities for dust;
- the development of documented systems for managing site practices and implementing management controls;
- the development of means by which the performance of the dust management plan can be assessed.

4.7.6 Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the planning stage, the siting of construction activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs:

- During working hours, technical staff shall be on site and available to monitor dust control methods as appropriate;
- Complaint registers will be kept on site detailing all telephone calls and letters of complaint received about construction activities, together with details of any remedial actions carried out;
- It is the responsibility of the contractor always to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust using best practise and procedures.

During the excavation of the basement, it is envisaged areas of rock will be encountered. This will be broken out using a rock breaker and the dust controlled using spray cannons.

In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are highlighted below.

4.7.7 Dust Control – Site Roads

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. However, effective control measures can easily be enforced. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles;
- Bowsers will be available during periods of dry weather throughout the construction period.
- Research has found that the effect of watering is to reduce dust emissions by 50%. The bowser will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

4.7.8 Dust Control – Land Clearing/Earth Moving

Land clearing / earth-moving during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.
- During excavation of contaminated materials, use of water will be controlled and managed to prevent generating contaminated runoff.
- Asbestos survey has been carried out on-site which identified asbestos-containing materials (ACMs) on site. A third-party consultant will be engaged to prepare an asbestos removal plan prior to commencing work on site. Asbestos dust will only be a risk during the demolition and excavation works. All works will be carried out by a suitably qualified specialist contractor. All ACMs will be managed in accordance with the relevant regulations.

4.7.9 Dust Control –Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.

The regular watering of stockpiles has been found to have an 80% control efficiency.

4.7.10 Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures.

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin always to restrict the escape of dust;
- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- A wheel wash facility will be employed at the exit of the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain.

4.7.11 Dust Management Summary

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the achievement of no dust nuisance occurring during the construction phase. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices about dust control;
- The development of a means by which the performance of the dust minimisation plan can be monitored and assessed;
- The specification of the measures to be taken to control dust emissions before it occurs and effective measures to deal with any complaints received.

4.8 Construction Traffic

4.8.1 Construction Vehicle Numbers

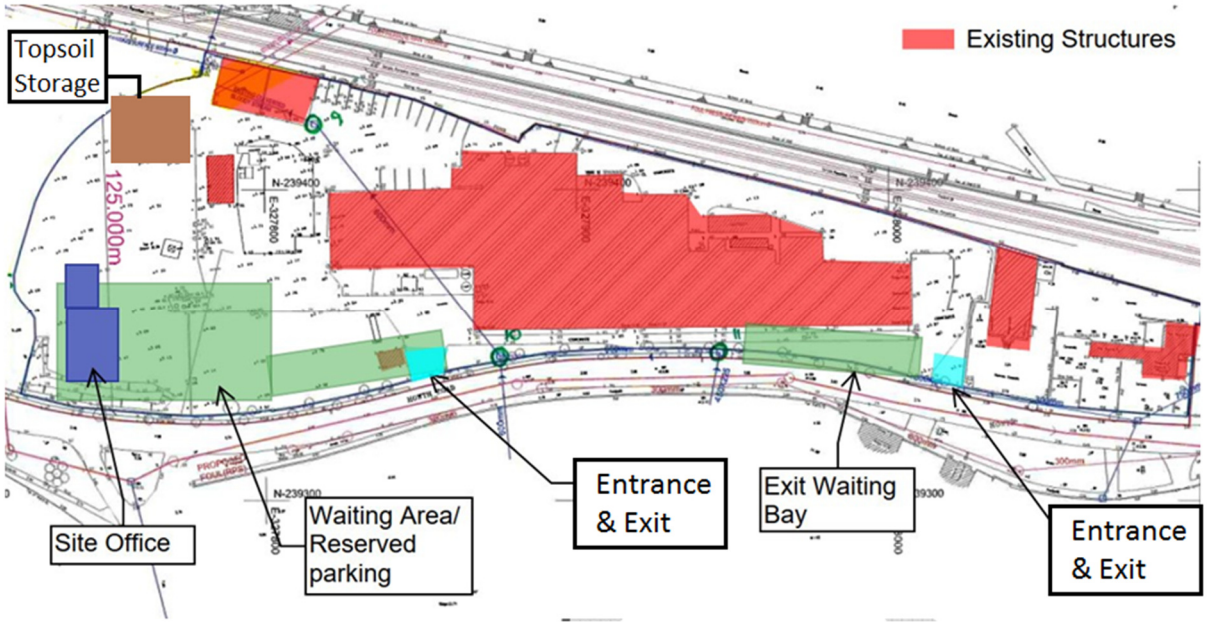


Figure 11 – Construction Site Layout

A Traffic and Transport assessment has been carried to assess existing traffic volumes within the area of the development. To prevent undesirable high volumes of construction traffic during the works, it may be decided to limit the times during which waste can be remove to outside morning and evening rush hour (typically 7am to 9.30am and 4.30pm to 7pm). Outside of these hours there are generally lower traffic volumes on the surrounding road network.

The following estimates for weekday traffic have been made with respect to construction traffic based on experience at similar project in similar locations:

- No of private vehicles per day from staff and site visitors - 35
- No. of light good vehicles per day from subcontract staff - 25
- No. of heavy goods vehicles per day during excavation process - 80
- No heavy goods vehicles per day outside of the excavation periods - 20

The above results in an estimate of 160 vehicles access the site on a daily basis which equates to a flow of approximately 310 passenger car units per day.

Over a 10-hour working day, this equates to 1 vehicle entering the site on average every 3.75 minutes, with 1 vehicle exiting the site on average every 3.75 minutes.

Having access to the Balscadden Construction Management Plan, all traffic from the development will use the Carrickbrack road and therefore will not influence traffic movements on Howth Road. The Balscadden development will be required to use this route, which is detailed in Section 4.6.3 below as “Option 2”.

Times of peak flows

Based on the traffic surveys carried out as part of the traffic Impact Assessment for this project, the peak traffic hours are defined 08:00 - 09:00 and 17:00 – 18:00. However, the surveys indicated that the morning peak was more extreme, with flows approximately 13% greater than the evening peak.

Significant construction traffic impact amelioration will be achieved by avoiding the morning peak hour between 8AM and 9AM.

Impact of site worker traffic

Construction operation time is predicted to be between 8:00 and 18:00. Given that the site workforce will be arriving at site before 8AM and leaving after 6PM, the traffic movements generated by the site workers will take place outside the peak times for network flows. This is a further significant amelioration of construction traffic impact.

Impact of HGV movements

Heavy goods vehicles will be spread across the course of the day and, where possible, scheduled to avoid concurrence with the peak traffic hours. To minimise impact with morning traffic particularly between the hours of 8am and 9am, no HGV will be allowed to leave site during this period.

However, vehicles coming to site will be against morning traffic and will therefore have little impact on existing traffic. These vehicles will be able to enter site and wait in the waiting area, if necessary, be loaded and ready to leave site after 9am.

Loading excavation vehicle will take circa 15minutes, it will then leave the loading the area and enter the tier cleaning area before leaving site. Space will be provided at the exit point to allow vehicles to wait before leaving site. A banks person will be provided at the gates to aid crossing the road.

The number of excavation vehicles is based on a predicted maximum 10 vehicles per hour based on a realistic availability and assignment of resources. This equates to an average of 1 No. vehicle movement every 6 minutes.

HGV Loading

Sources	Quantity m^3	Total
Pilling Mat Hardcore Onsite	1800	
Pilling Mat Hardcore Offsite	1800	
Earth Excavation	61,950	
Landscaping	1,500	
Total Earth plus Bulking Factor 15%		**77,110**
Rock		
Rock Excavation	11,920	
Rock Arising	510	
Total Rock plus Bulking Factor 50%		**18,645**
Total Excavated Material		**95,755**

Table 3- Materials on and off site (Table 1)

The quantity of material to be taken on and off site equates to 95,755m^3 and this includes an appropriate bulking factor in accordance with in (User Guide for BGS Civils – a suite of engineering properties datasets - Table 3. On the bases that every vehicle takes 8 m3 of excavated material. This will result in an estimate total of 30 weeks.

- 1 weeks total for hardcore to be brought to and off site.
- 28 weeks for excavation works at the start of the construction phase.
- 1 weeks depositories for landscaping when the construction is near completion.

The above is based on 80 trucks a day, between 9:00am and 17:00pm, for a 5-day week. This is a standard calculation based on a 5-day week, however excavation works may operate on Saturday to reduce the duration.

However, before works begin, the contractor will be required to submit a method statement for approval to outline the proposed schedule for removal of materials off site.

Public Road/Footpath

Howth road and footpath will be kept open for the duration of the construction. Practices will be incorporated to ensure the road is kept tidy, especially while earth excavation vehicles are in operation. This will be done in the form of a road sweeper or similar.

The footpaths at the entrances do not need to be replaced as the these were designed for HGV's when the development was in operation.

4.8.2 Vehicle Management

As noted previously, it is proposed to put in place a management system at the site to control the movement of vehicles insofar as is reasonably practicable. Measures to be put in place include:

- Scheduling of heavy goods vehicles – this relates to all stages of development and includes vehicles for removing waste/spoil from the site as well vehicles making deliveries. This system will allow the number of any such vehicles arriving/departing the site during the peak hours to be limited to prevent any impact on the local road network.
- Particular effort will be directed to avoiding such movements during the morning peak hour on the network between 8AM and 9AM.
- Unscheduled vehicles in this regard will not be permitted access to the site and all contractors and sub-contractors will be informed of this in advance;
- Mobility management for site workers as set out previously including a series of measures to encourage and facilitate travel by alternate means;
- Informing workers and expected visitors regarding access arrangements and parking provision to ensure an appropriate mode of travel is chosen;
- Clear and appropriate signage within the site to advise of permitted routes, speed limits, safety requirements etc.

4.8.3 Traffic Management Plans

It is important that the most appropriate construction routes be identified in order to bring materials to and from the site in the most efficient and environmentally sensitive manner. There are two possible option as shown in Figure 10. Option 2 is to be followed by the Balscadden Development to minimise traffic volumes, and is provided here for information purposes.

Figure 10-Traffic Management Plan

Option 1 – Directs traffic west on Howth road towards Sutton Cross. This is the quickest route.

Option 2 – Directs the traffic through Howth Village and takes a more indirect rout to Sutton Cross. This road has a sever incline as it climbs part of Howth hill. As mentioned above this route is to be used by the Balscadden development.

The proposed development will use route 1 as agreed with Fingal County Council. It is expected upon reaching Sutton Cross, traffic will take the most direct route to the nearest major roads infrastructure, i.e. the M50/M1.

All works to public roads will be in accordance with the necessary permits including roads opening licenses and traffic management plans which much be provided to and approved by the local authority in advance of any such works taking place.

4.9 Waste Management

For information regarding waste management refer to the Outline Demolition & Construction Waste Management Plan. (C&D WMP)

4.10 Drainage and Water Quality

Appropriate storage and settlement facilities will be provided on site. Areas of high risk include:

- Fuel and chemical storage;
- Refuelling areas;
- Vehicles and equipment washing areas; and
- Site Compound.

Fuel, oils and chemicals will be stored on an impervious base with a bund. Under LEED (Leadership in Energy and Environmental Design) there will be a strategy put in place to prevent pollution of the watercourse. There will be a strategy put in place to prevent pollution of the nearby watercourse, The Bloody Stream.

In most cases this will involve collecting the run-off and routing it to treatment by filtration, settlement or specialist techniques. As well as treatment immediately prior to discharge, water can be treated at source and on route to the discharge point – though this does not necessarily negate the need for further treatment before discharge. Widely used techniques include silt trap and surface drainage protection.

Concrete mixer trucks will not be permitted to wash out on site with the exception of cleaning the chute into a container which will then emptied into a skip.

As part of the overall construction methodology, sediment and water pollution control risk arising from construction-related surface water discharges will be considered. All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate fully with the Environment Section of Fingal County Council in this regard.

The piling methodology will include the use of water compatible grout to avoid any contamination of groundwater.

Personnel working on the site will be trained in the implementation of environmental control and emergency procedures in accordance with the CEMP.

4.10.1Dewatering (including Free Product)

The site is underlain by groundwater, impacted as a result of extended periods in contact with contaminated soils. As part of their works the contractor will allow for working in the wet, as well as dewatering of all excavations to allow continual progression of works. This will encompass the construction of a secant pile wall around the basement excavation to allow dewatering and dry excavation. Hotspot excavations are not expected to encounter much groundwater, however the removal of former underground storage/fuel tanks and the excavating out of any extended contaminate areas may necessitate appropriate dewatering to allow dry excavation by the contractor.

All abstracted water will be pumped through a treatment system to remove elevated suspended solids, to lower pH and remove hydrocarbon sheen and discharged to the foul sewer under licence from Irish Water (IW). To achieve this disposal route, a temporary water treatment facility (including holding tanks) will be constructed on the site, and other apparatus as required to ensure the

conditions of the temporary discharge consent are met (this may include activated carbon filtration, silt-busters etc.). There will be continuous automatic text alarmed monitoring of key parameters such as flow rate, pH and suspended solids. Contaminant remediation will be undertaken prior to dewatering as part of the strategy and this reduces risk associated with the dewatering water quality. Upon receipt of analysis results and screening against required consent limits, the Contractor will arrange the appropriate disposal, with the groundwater treated and discharged to foul sewer in accordance with temporary discharge consent (to be arranged by the Contractor).

Figure 11, Figure 12 & Figure 13 – Is the initial dewatering plan and sections for the site. Showing the proposed locations of the dewatering pumps, water treatment & monitoring system and discharge location into the public sewer obtained from the dewatering plan completed by Minerex Environmental.

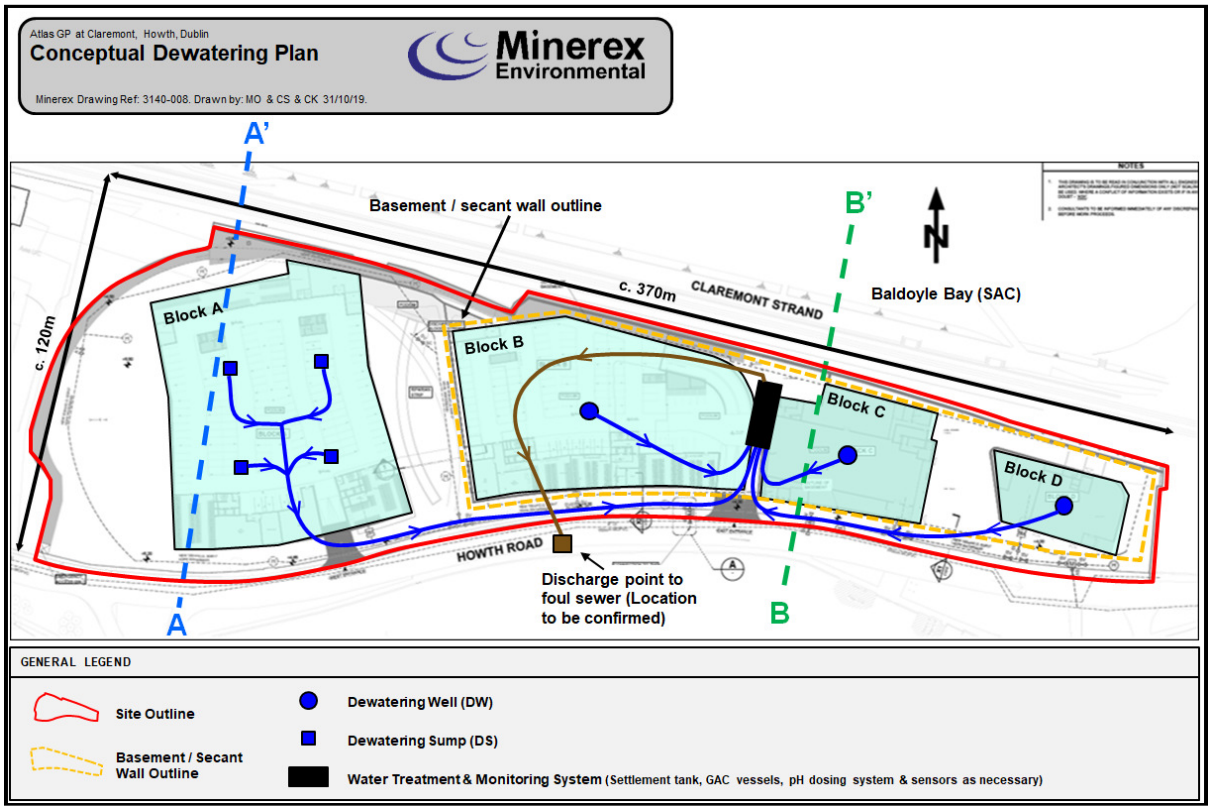


Figure 11- Dewatering Plan

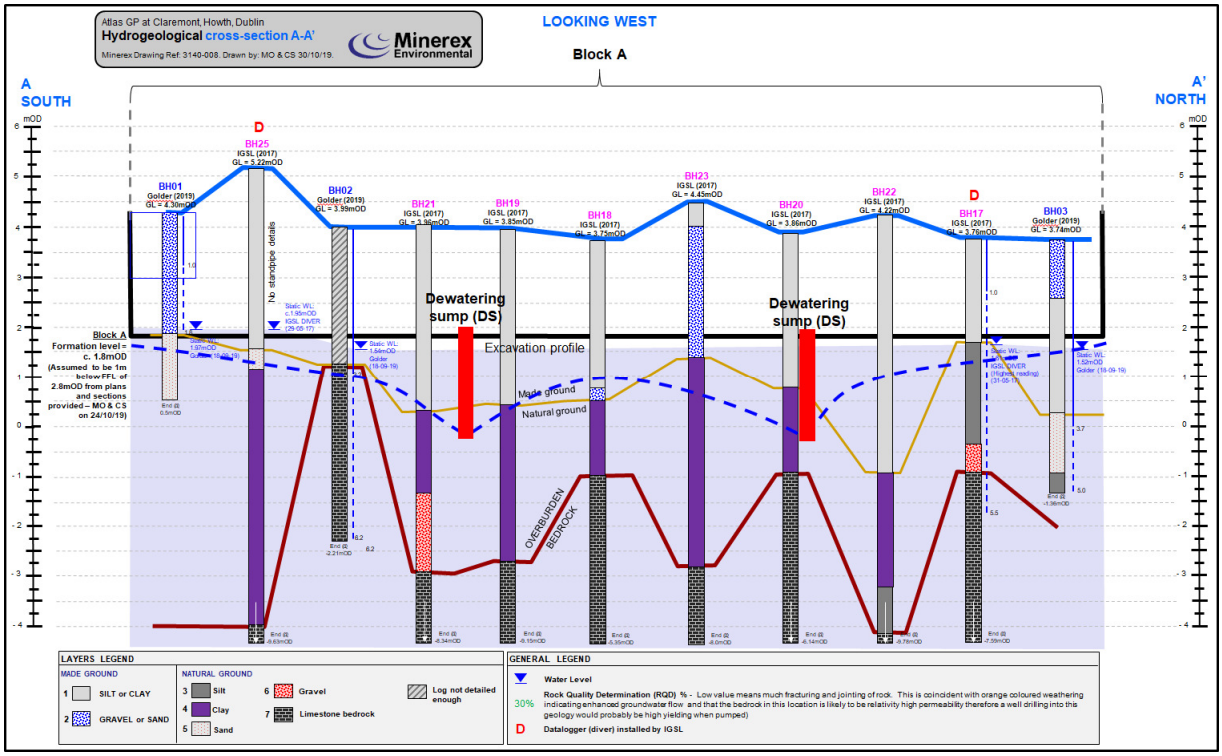


Figure 12 - Section A-A

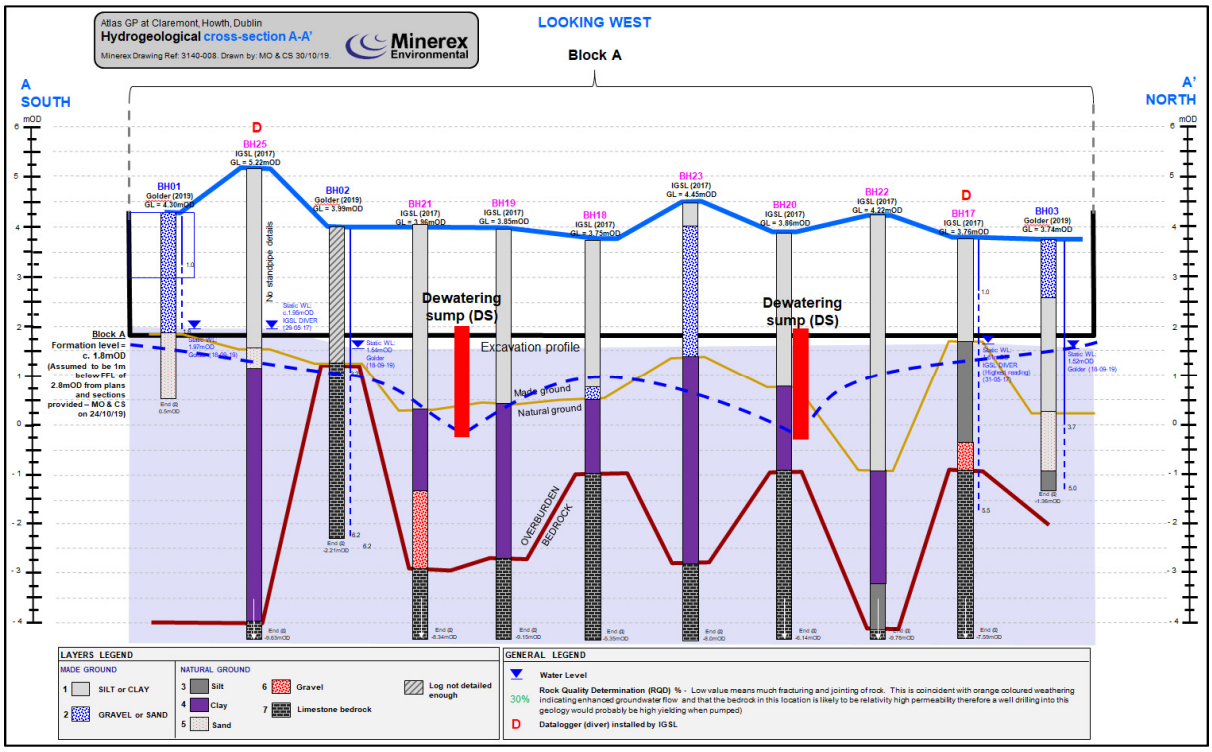


Figure 13 - Section B-B

The Contractor is to ensure that no contaminated water/liquids leave the site (as surface water run-off or otherwise), enter the local storm drainage system or direct discharge to the Baldoyle Bay SAC. Excavations and potentially contaminated stockpiled soils will be constructed/located/sheeted in a manner that ensures leachate generation is limited and water is contained within the site boundary.

If Free Product is identified during works, this will be pumped, and removed off site via tanker to a licensed waste disposal facility.

For information regarding water treatment process refer to the CEMP.

4.10.2Drainage and Water Quality Mitigation Measures

The following mitigation measures have been proposed to ensure that no potential adverse effects will arise from construction-related surface water discharges from the proposed development. The construction contractor will be required to implement the following specific mitigation measures, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control:

- Specific measures to culvert the Bloody Stream to prevent the release of sediment and contaminants to the Bloody Stream and the Baldoyle Bay SAC
- The cementitious grout used during the construction of the basement and the riparian strip will avoid any contamination of groundwater through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.
- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site;
- Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to the Bloody Stream and/or surface water drainage features, or drainage features connected to same to ensure that this does not happen during adverse weather conditions or during heavy rainfall periods.
- Pumping of concrete will be monitored to ensure that there is no accidental discharge.
- There will be no mixer washings or excess concrete discharged on site. All excess concrete is to be removed from site and all washout of concrete chutes to be captured in a tank which shall be removed off site for disposal at an authorised waste water treatment facility.
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area remote from the Bloody Stream and local surface water network and care and attention taken during refuelling and maintenance operations;
- All chemical drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and moved on spill pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- Temporary hydrocarbon interceptor facilities will be installed and maintained where site works involve the discharge of drainage water to foul sewer;
- All containment and treatment facilities will be regularly inspected and maintained;
- All mobile fuel bowsers will carry a skill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked;
- Refuelling of plant and machinery on site shall take place in a designated, bunded area which shall drain to a hydrocarbon interceptor.
- Implementation of response measures to potential pollution incidents;

- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures in the event of accidental fuel spillages and will be trained in spill clean-up and containment procedures;
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points;
- Water supplies will be recycled for use in the wheel wash. All waters will be drained through appropriate filter material prior to discharge to foul sewer from the construction site;
- The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act 1996 as amended, best practice and guidelines and the CDC&D WMP.
- A documented procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase; and
- Implementation of CDC&D WMP to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).
- Monitoring shall be carried out on surface water discharge (if necessary and as specified in any Discharge Licence associated with the construction phase of the project);
- During the excavation phase, the Bloody Stream will be re-routed. The stream will continue to flow underground in a 750mm diameter pipe diversion until the development is complete. This will eliminate the possibility of contamination from the works above. To ensure no damage from plant/activity above the pipes will be encased in 150mm concrete. The riparian strip to accommodate the flow of the Bloody Stream will be one of the last areas to be completed. This will involve construction of an open concrete channel spanning the breadth of the site, underground drainage connections at either ends, a settlement chamber and landscaped banks on either side of the channel.

4.11 Protection of Bloody Stream

Fingal County Council Requirement:

"Details of how the Bloody Stream shall be protected prior to any demolition activity on site and preparatory site clearance work, works to de-culvert and re-align the Stream and works to protect the integrity of the Stream during such works and thereafter, including bridge construction and works necessary to ensure the stability of the banks."

4.11.1 Construction to Operational

During the excavation phase, the Bloody Stream will be re-routed as shown in Figure 14. The stream will continue to flow underground in a 750mm dia pipe diversion until the development is complete. This eliminates the possibility of contamination from the works above. To ensure no damage from

plant/activity above the pipes will be encased in 150mm concrete. This is in accordance with Fingal County Council Guidelines and Greater Dublin Regional Code of Practice for Drainage Works.

Figure 14- Show the temporary diversion of the Bloody Stream during the construction phase.

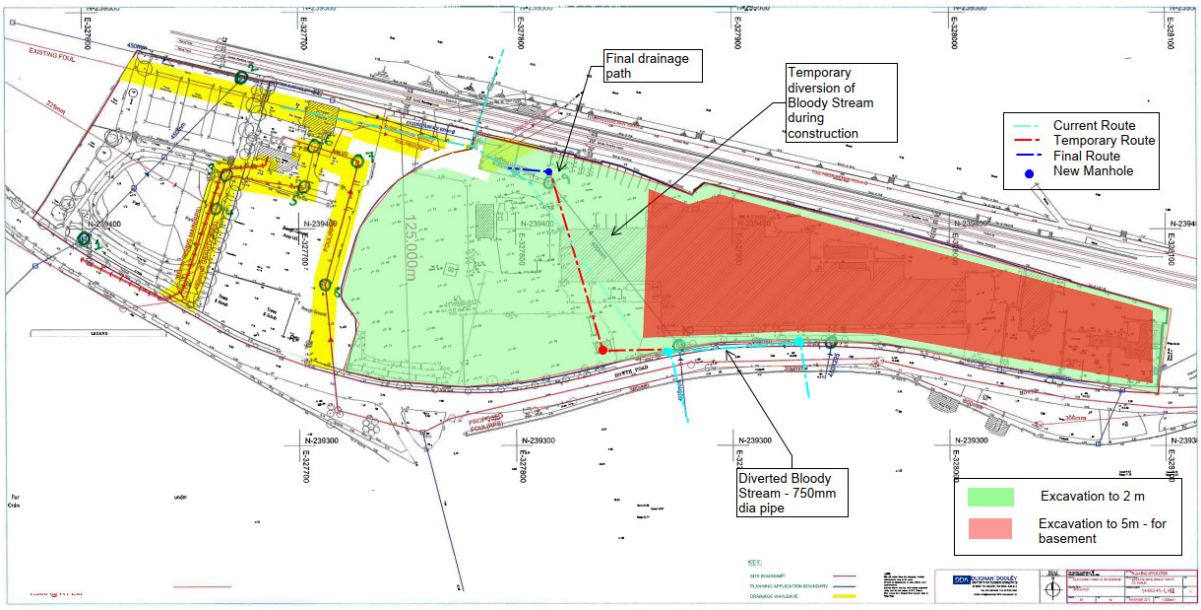


Figure 14- Temporarily Re-routing of Bloody Stream

The discharge of the Bloody Stream into the riparian strip will be one of the final elements to be completed. The riparian strip will involve the construction of an open concrete channel spanning the breadth of the site, underground drainage connections at either ends and landscaped banks on either side of the channel. Figure 15

The riparian strip will be of varying width, with graded 1:3 banks on either side, before the channel disappears under the raised walkway. A grate will be fitted over the outfall channel, which will stop any debris entering the underground system.

Connection of the Bloody Stream into the riparian strip will be carried out via a temporarily pumping water from the existing manhole to a safe location in the new channel while the new connection is formed. Once complete pumping will be stopped, and the Bloody Stream will flow into the riparian strip.

Figure 15 – Illustrates the Bloody Stream in the final condition.

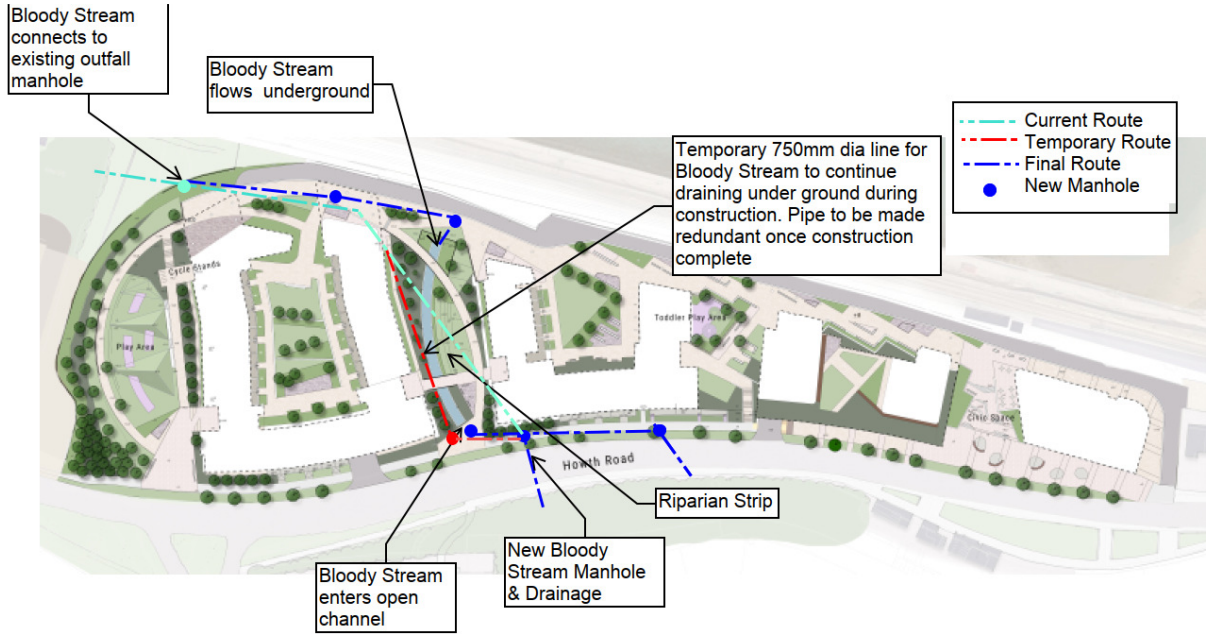


Figure 15 - Riparian Strip

4.12 Managing Groundwater

Shallow groundwater may be encountered during the construction works in particular the basement excavation. Where water must be pumped from the excavations, water will be managed in an in accordance with best practice standards (i.e. CIRIA – C750) and regulatory consents.
Water will not be discharged to open water courses (e.g. the Bloody Stream or shore) and will be disposed to foul sewer.

Disposal to sewer will require, a consent/licence issued under Section 16 of the Local Government (Water Pollution) Acts and Regulations and must be obtained from Irish Water.
Any such discharge licence is likely to be subject to conditions regarding the flow (rates of discharge, quantity etc.); effluent quality prior to discharge and pre-treatment (e.g. settlement/filtration, hydrocarbon separation etc.) and monitoring requirements. All dewatering will be undertaken in strict compliance with the conditions of the discharge licence for the project.

A treatment system will be installed for the duration of the project to meet the requirements of the discharge licence but will typically include a number of stages of settlement and filtration to remove sludge, suspended solids, free-phase hydrocarbons (oils) and dissolved phase hydrocarbons.

A monitoring programme will be implemented to ensure that water quality criteria set out in the discharge licence are achieved prior to discharging to the sewer.

4.13 Liaison

Fingal County Council relevant departments will be contacted and liaised with prior to the commencement. Where necessary Road Opening Licence applications will be submitted for approval from Fingal County Council. We acknowledge that many parties will have an interest in this project throughout the duration of the contract. Our presence during the construction phase will have a direct impact on the local environment, particularly concerning the following:

- Local residents and land owners

- Tenants and Residents Associations
- Planning Authority
- Other Statutory Authorities
- Building Control
- Environmental Health
- Utilities Providers
- Iarnród Éireann (see appendix for previous correspondence and comments received).

The project manager will be responsible for project strategic liaison whilst the construction manager will be responsible for day to day liaison and logistics for all the construction related activities.

Both will be permanently based on site with the construction manager as the first point of contact for all concerns, issues and complaints. A display board will be erected outside the site, which as minimum will identify key personnel contact addresses and telephone numbers.
If works interface with local stakeholders workshops and forums will be held on a regular basis to maintain open relationships and keep stakeholders up to date on construction progress and its impact on all third parties.

Newsletters, liaison meetings, progress photos, organised site visits are all methods by which we are able to communicate how we intend to carry out the works and keep people informed

4.14 Emergency Work

The project team appreciates that occasionally incidents arise whereby it is impossible or impractical to comply with all the requirements. In these emergency situations, as much notice as possible about the works will be given to the appropriate authorities and neighbours. Examples of such works are Crane and Hoist erection / removal or special crane lifts.

In the event of spillages or other incident steps will be taken to prevent environmental pollution, for example through protection of drains by use of drain covers or booms, use absorbent granules following and oil / chemical spill and turning off equipment or other sources of noise or dust.

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the corporation and relevant authorities and recorded in the site environmental register.

4.15 Cranes, Lifting of Equipment and Road Closures

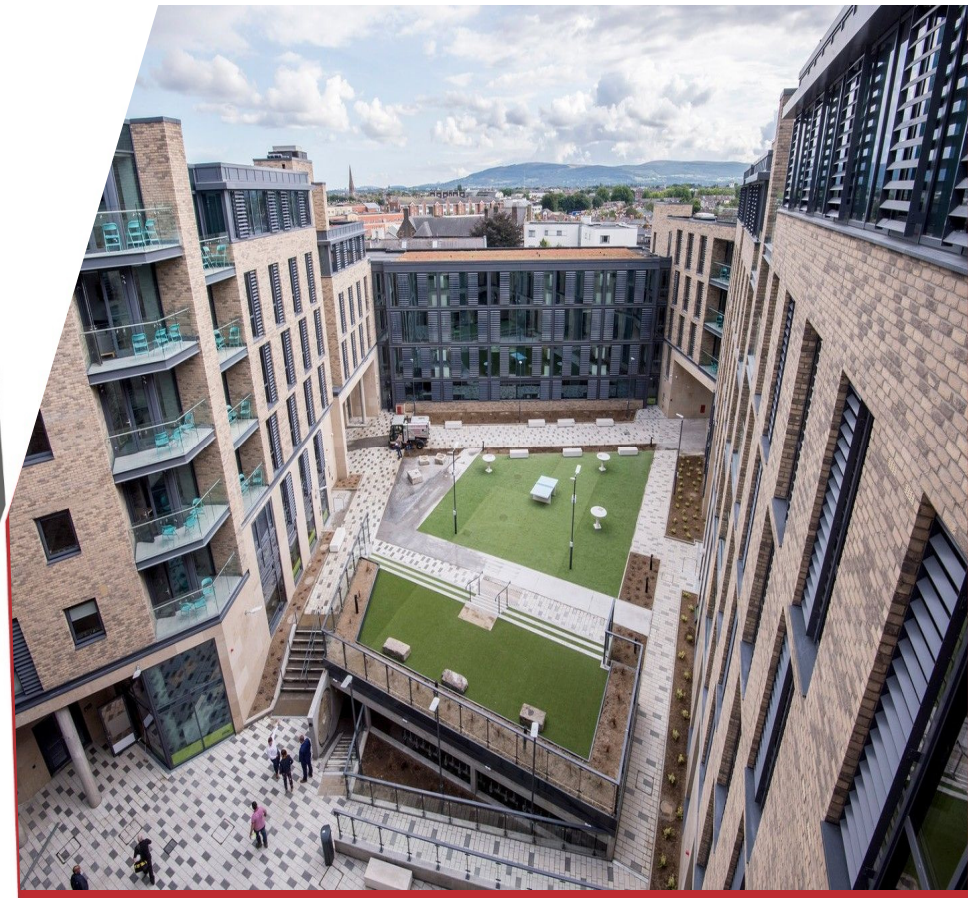
A Tower crane and concrete placing boom will be provided to erect the RC frame. A combination of a goods hoists and a telehandler will offload and distribute materials for the finishing trades.

All lifting equipment and appliances will carry current test certificates and be inspected prior to use. Trained banksmen will attend the cranes always.

Permits and approval for road restrictions will be applied for with Dublin City Council and all parties involved kept informed on progress. We will obtain approval from the Environmental Health Department to ensure that what is planned is feasible within the times agreed.

Following approval, details of the works proposed including dates, times mobile number of supervisor and copies of letter drops etc. will be forwarded.

BARRETT MAHONY
CONSULTING ENGINEERS
CIVIL & STRUCTURAL



APPENDIX 1

EPA WASTE GUIDANCE

Do I need a Waste Licence, Permit or Certificate of Registration ?

Sept 2008 – V15

KEY
COR – Certificate of Registration under SI 821 of 2007 as amended
Permit – under SI 821 of 2007 as amended
Licence – under Part V of the Waste Management Act
Tyre COR – under Tyre Regulations SI 664 of 2007
WEEE RC – Registration Cert. under WEEE Regulations SI 340 of 2005
P&D Act - Planning & Development Act 2000

NB: See definitions in Article 5 of SI 821 of 2007

Private Sector Activities

Exempt from requirement to hold a Waste Licence, Permit or COR:
- WMA Section 39(7):- Specified waste activities on an IPPC regulated site; deposit of litter in a bin; the disposal of specified animal by-products; the disposal of household waste within the curtilage of the dwelling where produced; transfer of waste to an authorised person for Recovery.
- WMA Section 51:- Recovery of sludge for use in agriculture; recovery of animal or poultry blood or slurry/manure.
- Temporary storage (<6 months) of waste on the site of its production (certain limitations for WEEE distribution centres, see Art 39(1a) of SI 340 of 2005).
- WEEE Regs SI 340 of 2005. Art 39(1) & (1b):- Temporary storage of certain quantities & types of WEEE at a distribution outlet; and storage by registered charities of <90m^3 of certain household WEEE and <50kg mobile phones (at any one time).
- Tyre supplier temporarily storing <180m^3 waste 'take-back' tyres (SI 664 of 2007, Article 33(1))
- Temp storage of waste batteries at workplaces, distributors & charity venues. Certain limits apply. See Article 44 of SI 268 of 2008

Recovery or Disposal of waste to Land

I-5; II-5 Recovery of Inert Excavation or Dredge Spoil to land
- II-5 <25,000t total → COR
- I-5 >25,000t and <100,000 total → Permit
- >100,000t total → Licence

I-6; II-6 Recovery of Inert waste to land
- II-6 <10,000t total → COR
- I-6 >10,000t and <50,000 total → Permit
- >50,000t total → Licence

Landfill Disposal → Licence / Permit

II-9 Storage at place of extraction of chemically unaltered quarry or excavation material where conditions under S261 of P&D Act have not been imposed
- No foreseeable use → Licence / Permit
- Use in on-site restoration → COR

I-10; II-13 Organic Waste
- II-13 Recovery to land for use in eco-benefit or agriculture, food crops & forestry <1000tpa → COR
- I-10 Recovery to land >1000tpa <50,000tpa → Permit
- Recovery to land >50,000tpa, or Disposal to land → Licence

Other

Waste Transfer/Storage/Treatment/Collection Location

HHW Reception & Temporary Storage for onward recovery
- II-1 <50tpa (<25t solid, <25t liquid) & <30 days in storage for any item → COR
- I-1 >50tpa OR >30 days in storage for any item, AND <200tpa (100liq, 100t sol) → Permit
- >200tpa (100liquid, 100t solid). OR Storage/Transfer for Disposal → Licence

Reception and Temporary Storage for onward Recovery or Disposal

I-1; II-1 Household Hazardous Waste

I-2, I-4, I-12, II-3 Scrap Metals & Vehicles
- II-3 Reception, Storage at any one time of <6 crashed or immobilised non end of life waste vehicles → COR
- I-4 Reception, storage and recovery of Metals (incl. depolluted vehicle scrap) → Permit
- I-2, I-12 Reception, Storage, Recovery, Treatment (Depollution) of ELV and other vehicles → Licence / Permit

I-3 WEEE Reception, Treatment & Recovery
- >10,000tpa → Licence
- <10,000tpa → Permit
- I-1 Other → WEEE RC

WEEE RC
- Stand alone unit & <30 days storage for any item. At any one time:- <540m^3 household WEEE; <12,000 of lighting units; <300kg of mobile phones
- II-4 At any one time:- <540m^3 household WEEE; <12,000 of lighting units; <300kg of mobile phones. <30 days storage for any item

I-1; II-4 WEEE Reception & Storage, Transfer for Recovery

II-4 Non-WEEE Equipment containing CFCs
- Reception & Storage for transfer to Recovery of <1t at any one time. <30 days storage for any item
- II-4 Reception & Storage for transfer to Recovery of: (a) <1t (at any time) of used B&A; (b) <10t used industrial & automotive B&A. AND <30 days storage for any item

I-9; II-4 Batteries & Accumulators
- I-9 Reception, Storage & Recovery of <1000tpa used batteries & accumulators → Permit
- Reception, Storage & Recovery of >1000tpa used batteries & accumulators → Licence

Waste Incineration

Farm use of tyres (<8 tyres per m^2 of silage pit) → Tyre COR

I-7; II-7 Recovery of Inert C & D waste
- >50,000t tpa or >15% residual to Disposal → Licence
- I-7 >10,000tpa, <50,000t tpa & <15% residual to Disposal → Permit
- II-7 <10,000tpa & <15% residual to Disposal → COR

I-8; II-12; II-13 Biowaste
- II-13 Recovery of organic waste for benefit to agriculture, food crops, forestry, & eco-benefit. <1000tpa → COR
- II-12 Storage & Bio- Treatment at site of production of <50tpa, and <20t compost, digestate & biowaste stored at any one time → COR
- I-8 Reception, Storage & Bio-Treatment >50tpa but <10,000tpa, and where <6000m^3 compost, digestate & biowaste stored at any one time → Permit
- Reception, Storage & Bio- Treatment >10,000tpa, OR where >6000m^3 compost, digestate & biowaste stored at any one time → Licence

II-14 Reception & temporary storage for transfer of containers of waste refrigerant gases, halons, & fluorinated greenhouse gases
- >18t stored at any one time → Licence
- <18t stored at any one time → COR

I-10, I-11; II-2 General MSW, Commercial & Industrial Waste, and Other Waste activities
- II-2 Reception & temporary storage for off-site Recovery or Disposal of <1000t at any one time, of waste deposited by the public [haz. or non-haz., and where not otherwise limited by Schedule III of SI 821/07 as amended.] → Permit
- I-11 Reception, storage and transfer of non-hazardous waste for Disposal (other than at a landfill facility) <7,500tpa → Permit
- I-10 Recovery of non-hazardous waste <50,000tpa, and with <15% residual to onward Disposal → Permit
- Other → Licence

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CIVIL & STRUCTURAL

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Risk Assessment

DESIGN RISK ASSESSMENT RECORD SHEET

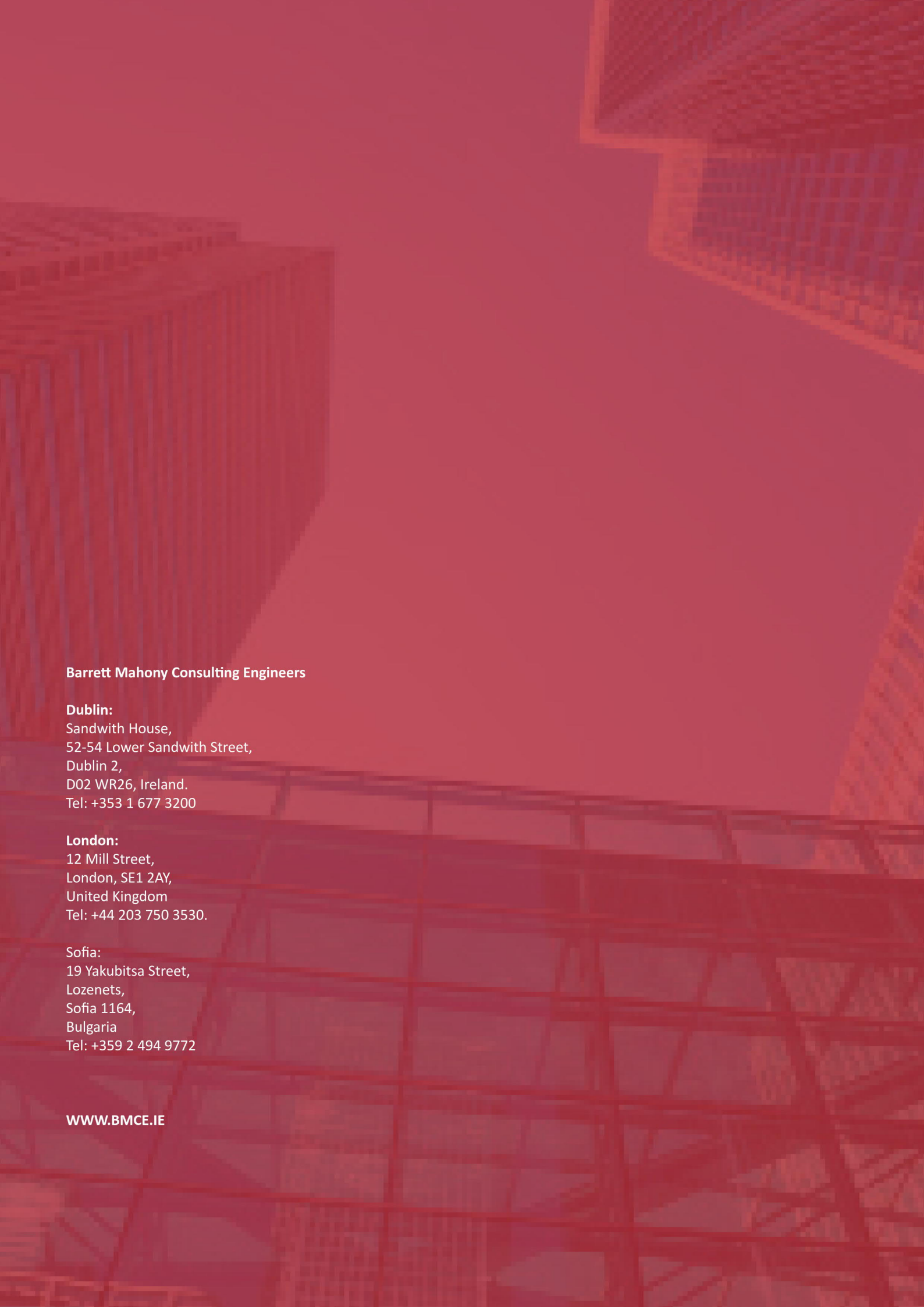
PROJECT NO:	18.386	**PROJECT ENGINEER:**	Margaret Costello
PROJECT NAME:	Claremont Project, Howth	**PROJECT DIRECTOR:**	Vincent Barrett

DOCUMENT NO	**Job No – DRA - 01**	**Design Stage REV:**	**DATE: 16/04/2019**
Revision Description:			

STANDARDS REVIEW STAGES	**Rev**
CONCEPT / PLANNING STAGE	**PL**
SCHEME STAGE	**SC**
TENDER / CONSTRUCTION STAGE	**TC**
TEMPORARY WORKS	**TW**

REF NO.	**Key Hazards / Risk Identified**	**EVALUATIONS & DESIGN DECISIONS MADE (OR ALTERNATIVE ACTIONS)**	**Risk TAG (see table below)**
1	Drowning	The exposed channel has been reduced to 600mm. This cannot prevent drowning but a person is able to climb out of the channel. With regards to protection. Signage will be provided in the area and a lifesaving buoyancy aid. In the event of flooding, the riparian strip will be closed off to the public. This will be the responsibility of the management company. The risk of drawing during construction, is not a issue as the bloody stream will remain underground for the duration of construction period.	B
2	Falling from a height	During construction Risk of falls from a height is a potential issue. The contractor for the development will be responsible to ensure safe working environment is provided. Final state - The podium walkway is 4 metres higher than ground level. Handrails will be provided on both sides of the podium.	E
3	Death due to collision between staff and machinery.	Designated walkways to be provided around the whole site to provide safe passage for site workers. This is to be updated monthly and to be discussed in all inductions.	B

SUMMARY RISK CLASSIFICATION FOR ATTENTION OF PSDP, PSCS AND OTHER DESIGNERS		
Ref No's	**Risk Tag: Notes re providing Information**	**Remarks**
	A: For Client's Designers	
	B: Particular Risks – Schedule 1	
	C: Other Particular Risks	
	D: re Assumed Construction Methods	
	E: For safety File	



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